

## **April 2008 - Standard Penetration Test (SPT) Hammer Efficiencies for Caltrans Drill Rigs**

The information provided below is specific data gathered from Caltrans drill rigs currently in service. The data is not intended for use with other drilling equipment. If a Caltrans drill rig to be used on a project does not have a hammer efficiency listed below, then it is recommended that Caltrans staff request a SPT hammer efficiency test from the Foundation Testing Branch at the following web-link: <http://www.dot.ca.gov/hq/esc/geotech/requests/pda.pdf>

Hammer Type	Drill Rig	Equipment No.	Avg. Hammer Efficiency, $ER_i$ (%)	Source
Diedrich Automatic	CS 1000	8123	80	Hammer Efficiency Report (12-7-05)
	CS 2000	8435	84	Hammer Efficiency Report (12-7-05)
CME Automatic	CME-75	5677	82	Hammer Efficiency Report (12-7-05)
	CME-85	7388	87	Hammer Efficiency Report (12-7-05)
	CME-750	6463	76	Hammer Efficiency Report (3-20-08)
Boart/Longyear Automatic	Acker MP-8	0398	74	Hammer Efficiency Report (3-20-08)
Safety Hammer *	B-47	4785	53	Hammer Efficiency Report (12-7-05)
	B-47	4786	57	Hammer Efficiency Report (12-7-05)
	B-47	5081	68	Hammer Efficiency Report (12-7-05)

\* Due to the variability and factors potentially affecting the use of safety hammer, it is recommended that the geotechnical designer review the 2005 hammer efficiency report to determine the appropriate hammer efficiency. Average hammer efficiency values for each drill rig tested in the 2005 study were presented for the convenience of staff. Shortly after the 2005 study, the CS 500 driving system was found to potentially have problems with the driving system, therefore it was excluded from the table above. The Acker 75 (C#3837) and the B-47 (C#5058) were decommissioned, therefore both results from the 2005 study were excluded in the table above.